

Appendix A

Revolution Wind Farm O&M Source Determination Supporting Documentation

1.0 OVERVIEW

Revolution Wind, LLC (Revolution Wind), a 50/50 joint venture between Orsted North America, Inc. and Eversource Investment, LLC, has submitted an Outer Continental Shelf (OCS) air permit application to support the construction and operation of the Revolution Wind Farm (RWF) Project (the Project). The air permit application has been prepared by Revolution Wind in accordance with OCS air permit regulations promulgated by the United States Environmental Protection Agency (EPA) in Title 40 Part 55 of the Code of Federal Regulations (40 CFR 55).

Revolution Wind is proposing to install up to 100 wind turbine generators (WTGs) and the associated offshore infrastructure required to transmit the power generated by the WTGs to an onshore interconnection. These Project components require the installation of two offshore substations (OSSs) installed on platforms, inter-array cables (IAC) connecting the WTGs, interconnection cabling to link the OSSs (OSS-Link Cable), and a bi-directional offshore export cable to bring the power from the OSSs to shore.

The Project would be located in federal waters on the OCS approximately 15 nautical miles (nm) southeast of Point Judith, Rhode Island, 13 nm east of Block Island, Rhode Island, approximately 7.5 nm south of Nomans Land Island National Wildlife Refuge (uninhabited island), and between approximately 10 to 12.5 nm south/southwest of varying points of Rhode Island and Massachusetts coastlines. Construction is anticipated to begin in 2023 following the receipt of all necessary approvals. The construction period is expected to occur over 12 to 18 months. Once commissioned, the Project is expected to have an operational life of 20 to 35 years.

The commissioning of the OSSs will require the use of temporary and permanent generators. During commissioning of the WTGs, the WTGs will be powered by the integrated battery backup system and are not anticipated to require the use of a generator. However, if the battery backup system were to fail, or not provide sufficient power for the full duration of commissioning, temporary generators may be utilized until the WTGs are connected to and are able to be powered by the grid.

During the O&M phase, the WTGs will primarily be powered by the grid via the bi-directional export cables and inter-array cables. In case of grid outages, cable faults, or other situations where grid power is not available, the WTGs will utilize power from the integrated battery backup system. If the integrated battery backup system was affected by a fault or otherwise lacked sufficient power (due to lack of wind in the prior 3 days) at the same time as a grid outage, a temporary generator may be transported to the site to power the affected WTG.

This memorandum has been prepared to document Revolution Wind's air quality permitting approach and justification of the definition of the OCS source during operations and maintenance (O&M) used in preparation of the application. This determination is integral to proper permitting of the Project and includes defining the area within which vessel operations must be accounted for in emissions calculations and a determination of which vessel operations must be included.

In each of two recent permitting actions (Vineyard Wind and South Fork), EPA Region 1 determined that the entire group of WTG and OSS associated with the projects constituted a single OCS source, during both the construction and commissioning phase, and the O&M phase. South Fork Wind only assumes the use of a permanently installed backup diesel generator at the OSS during the O&M phase.

The Ocean Wind project off the coast of New Jersey has also been in discussion with EPA Region 2 regarding the classification of sources. The Ocean Wind project differs in that the Ocean Wind WTGs are expected to have sulfur hexafluoride (SF₆) within the switchgear, whereas the WTGs that would be utilized for Revolution Wind do not have SF₆. For Ocean Wind, EPA Region 2 has taken a preliminary position on the OCS source classification that claims because the WTGs have a remote possibility of fugitive emissions from SF₆ leakage, the Ocean Wind project's WTGs are OCS source.

This memorandum will review EPA's proposed approach for Vineyard Wind, South Fork Wind, and Ocean Wind as it relates to Revolution Wind. The review consists of presenting the relevant regulatory and interpretive background and evaluates the distinguishing characteristics of the Revolution Wind Project that are determinative in defining the Project (or portions of the Project) as an OCS source. As mentioned above and discussed further below, Revolution Wind is distinguishable from Vineyard Wind and Ocean Wind, in that the Project will not mount permanent generators to the WTGs in any phase of the Project and will not have SF₆ within the switchgear, so the WTGs also have no potential for fugitive emissions. As such, the Revolution Wind WTGs are not sources of emissions during construction or O&M, and are therefore, not part of the OCS source in either phase. Therefore, only the two OSSs, which will have permanent emergency generators, should be included in the single source categorization of the Project as a "Wind Development Area facility" (WDA facility).

2.0 REGULATORY BACKGROUND

OCS permitting involves the interaction of Clean Air Act (CAA) requirements specific to the OCS with other CAA permitting requirements, including both EPA's New Source Review (NSR) pre-construction and Title V operating permitting programs. Determining which regulatory requirements apply requires defining the scope of these programs with respect to a given collection of air pollutant emitting activities.

The first step in determining the applicable air permitting requirements is to define the OCS source. An OCS source is defined in 40 CFR 55.2 as follows:

OCS source means any equipment, activity, or facilities which:

- 1) *Emits or has the potential to emit any air pollutant.*
- 2) *Is regulated or authorized under the Outer Continental Shelf Lands Act ("OCSLA") (43 U.S.C. Section 1331, et. Seq.).*
- 3) *Is located on the OCS or in or on waters above the OCS.*

This definition shall include vessels only when they are:

- 1) *Permanently or temporarily attached to the seabed and erected thereon and used for the purposes of exploring, developing, or producing resources (therefrom, within the meaning of Section 4(a)(1) of OCSLA (43 U.S.C. Section 1331, et. seq.).*
- 2) *Physically attached to an OCS facility, in which case only the stationary source aspects of the vessels will be regulated.*

2.1 Relevant EPA Interpretations of the Term "OCS Source"

Subsequent guidance from EPA has clarified this definition, confirming that OCS sources may be temporary in nature, or at least, can be distinguished between construction and operational phases.

Letter from US EPA Region 2, Steven Riva, Chief Permitting Section Air Programs Branch to Robert Gibbs, Vice President Garden State Offshore Energy, October 15, 2010

In 2010, EPA Region 2 evaluated OCS permit applicability as it related to the installation of a meteorological monitoring station buoy to support development of a wind farm for Garden State Offshore Energy (GSOE). GSOE proposed installation of the buoy to collect meteorological data to support a planned windfarm. EPA Region 2 evaluated the applicability of 40 CFR Part 55 as it related to the installation and operation of the buoy. The memorandum determined that during construction the activities have a potential to emit and would therefore come under the definition of OCS source. However, once operational the buoy would not be considered an OCS source because once attached to the seafloor the buoy does not have the potential to emit air pollutants.

This letter stated:

In light of the regulatory definition of an OCS source, the spar buoy itself, once constructed (i.e., during its operational phase) will not be an OCS source because even though attached to the seafloor, it has no potential to emit any air pollutant. The crew boat that will provide service and maintenance for the spar buoy, during the buoy project's operational phase [will attach to the seafloor or to the buoy itself and will result in emissions. Even while attached to the spar buoy] the crew boat is not an OCS source because the spar buoy by itself is not an OCS source. (See Garden State Letter at Page 3).

Letter from US EPA OAR, Karl Moor, Deputy Assistant Administrator for the Office of Air and Radiation, to Walid Masri, Program Director, West Coast Decommission Program, Chevron USA, Inc., January 19, 2021

EPA responded to a request from Chevron USA, Inc (Chevron) requesting a determination of whether drilling platforms cease to be an OCS source during decommissioning, once they have all pollutant emitting activities removed (hereinafter Chevron Letter). Chevron contended that during the abandonment phase, once all pollutant-emitting equipment and all potential emission sources on the platforms were removed it could surrender its existing operating permits because the platforms would have no emissions or potential to emit, and therefore no longer satisfy the necessary criteria to be considered an OCS source in the definitions of the CAA Section 328(a)(4)(C) and 40 CFR § 55.2.

In addition, relying on several Environmental Appeals Boards (EAB) decisions Chevron contended that the support vessels associated with the platforms would not be considered OCS sources, or cause the platforms to continue to be considered an OCS source, because the support vessels are only direct emissions of an OCS source when there is an OCS source to which they can be attributed.

EPA concurred with Chevron's conclusions in both instances: (1) the platforms ceased to be OCS sources once they no longer had any activities with the potential to emit any air pollutant and (2) that support vessels would also not be considered direct sources of emissions because there would be no OCS sources to which they could be attributed.

EPA concluded that a facility that previously was considered an OCS source can cease to be an OCS source when the definitional criteria are no longer met. The EPA relied on a previously established concept that once a definitional criterion in 40 CFR 55.2 is no longer met an OCS source no longer exists. In the Chevron case once the potential to emit facet of the OCS source definition was no longer met the facility was no longer an OCS source and would no longer be treated as such. (Chevron Letter at Page 5). By extension, EPA further concluded that the local definitions of stationary source that govern permitting of NSR, or Title V requirements only apply where there is an OCS source as defined by 40 CFR § 55.2. Since there was no OCS source, permitting regulations would also not apply.

Furthermore, EPA addressed the question of whether support vessels would continue to be considered sources of potential emissions of the platforms once the OCS source no longer existed. Section 328(a)(4)(C) identifies three criteria each of which must be met for:

any equipment, activity, or facility" to be considered an OCS source. The last criterion is clearly satisfied with regard to the Platforms because they continue to be located on the OCS...The criterion in Section 328(a)(4)(C) germane to this determination is whether the Platforms "emit or ha[ve] the potential to emit any air pollutant." Section 328(a)(4)(C) of the CAA further states that "[f]or the purposes of this subsection, emissions from any vessel servicing or associated with an OCS source, including emissions while at the OCS source or enroute to or from the OCS source within 25 miles of the OCS source, shall be considered direct emissions from the OCS source." (EPA's added emphasis retained). This sentence in the definition of OCS source draws a clear distinction between the OCS source and any vessel servicing or associated with that source. Thus, the vessels in this context are not the OCS source, and the emissions from these types of vessels are not deemed to be emissions from an OCS source if there is no longer an OCS source present.

For a vessel to service or associate with an OCS source, there must be equipment, an activity, or a facility that meets the three established defined OCS source criteria independent of such vessel. (Chevron Letter at Page 4)

Note that EPA modified the January 19, 2021 letter in a follow-up on April 20, 2021 to clarify that under the facts of that situation, there was the possibility that future activity might be classified as an OCS source under certain conditions. However, the April 20, 2021 letter did not change the EPA's interpretation of the OCS source definition in the January 2021 letter.

2.2 Relevant Interpretations Regarding the Definition of “Air Pollutant” within 40 CFR Part 55.2

In 1992, EPA interpreted its regulatory authority under section 328 of the CAA to be restricted to federal and state criteria pollutants, and pollutants regulated pursuant to PSD, and has limited the OCS rule to these pollutants. At 57 Fed. Reg. 40804 (September 4, 1992).

In *Utility Air Regulatory Group v EPA*, 134 S. Ct. 2427 (2014) the United States Supreme Court severely limited the EPA's ability to interpret “air pollutant” to include GHG. The decision is based on the concept that the term “air pollutant” is narrowly interpreted and given context-appropriate meaning. The Supreme Court stated that a broader interpretation of “air pollutant” to include GHG would radically transform the PSD and Title V programs to make them unworkable.

3.0 ANALYSIS

The first criteria of the definition of OCS source are to identify any equipment, activity, or facility which emits or has the potential to emit any air pollutant. As a note, this mirrors the NSR regulatory structure which includes all “pollutant-emitting activities” as being part of the “stationary source” that is subject to permitting [See 40 CFR §52.21(b)(6)].

Based on the CAA, implementing regulations, and interpretive guidance referenced above, the Project envisions that only the OSSs (with accompanying permanent emergency generators) and any jack-up vessels, or vessels that would tether to the OSS or jack-up vessel would be considered OCS sources. Individual WTGs, because they have no source of criteria pollutants, would not properly be considered OCS sources, and thus would not be aggregated with other OCS sources as a “WDA Facility”. During commissioning, the WTGs would use battery backup systems, and only utilize temporary emergency diesel generators should battery backup or grid power be unavailable. During O&M, a WTG would only utilize a temporary diesel generator in the rare event there were to be a grid outage, the WTGs were unable to produce power, and the integrated battery backup system was affected by a fault or otherwise lacked sufficient power.

3.1 Diesel-fired Emergency Generators

The remote possibility that an emergency diesel fired generator on a vessel might be used to provide power to a WTG does not cause the WTG to be part an OCS source or part of the “WDA Facility”. During O&M, the only possibility for the use of an emergency generator on the WTG is if several other forms of power supply were to fail first.

Part 55 defined “potential emissions” as “the maximum emissions of a pollutant from an OCS source operating at its design capacity...”. This definition mirrors 40 CFR 52.21 where EPA defined potential to emit (PTE) as “the maximum capacity of a stationary source to emit a pollutant under its physical and operational design.” These definitions make clear that EPA intended PTE to only reflect the design of the process.

The remote possibility of grid outage is not part of the operational design and is therefore outside the definition of PTE. A temporary diesel generator would only be necessary if there were to be a grid outage, the WTGs were unable to produce power, and the integrated battery backup system was affected by a fault or otherwise lacked sufficient power. All conditions happening simultaneously is an unlikely scenario and not considered a typical operating scenario by Revolution Wind. A similar scenario would be if a hurricane or other significant storm caused irreparable damage to multiple turbines, resulting in the need to remove and replace these turbines. This is not a scenario that is part of its operational design although there is a remote possibility something like this could occur. Neither scenario is something that is required to be permitted because these conditions are not inherently part of the design of the WTG. Therefore, for EPA to consider the emergency diesel fired generators as reason to find the WTG to be part of the OCS source is inconsistent with the definition of PTE.

3.2 Switchgear Fugitives

EPA has previously used the potential for fugitive emissions of SF₆ from the WTG switchgears as justification for categorizing the WTGs as meeting the definition of “emits or has the potential to emit any air pollutant”. But Revolution Wind’s WTGs will not use SF₆ in any fashion and therefore will not emit or have the potential to emit any SF₆.

4.0 CONCLUSION

The WTGs that will be installed for the Revolution Wind project will not use any of the operational circumstances that EPA has previously referenced when categorizing the WTGs of other projects as OCS sources or being part of an WDA facility.

Within EPA’s *Source Determination Analysis for Vineyard Wind OCS Windfarm* memorandum, dated June 26, 2019, EPA stated the following:

The EPA has determined that the pollutant-emitting activities...that are included in the definition of an OCS source are a single source for the purposes of applying the PSD, NNSR, and Title V permit programs.

Revolution Wind’s WTGs are not included in the definition of an OCS source, since they will not have any potential to emit air pollutants, and will only do so in an unlikely emergency scenario. Therefore, they would not be properly included in the “WDA Facility” and would not satisfy the definition of an OCS source for a “vessel servicing or associated with an OCS source, including emissions while at the OCS source or enroute to or from the OCS source within 25 miles of the OCS source, shall be considered direct emissions from the OCS source”. Therefore, vessels that service or are associated with the WTGs while enroute to or from the WTGs and within 25 miles of the WTGs would not be properly included in the PTE.